

Conference Abstract

Visualisation of Taxonomic Knowledge: Exploring and reporting taxonomic data, training students in taxonomy

Thierry Bourgoin[†], Régine Vignes Lebbe[§], Nicolas Bailly[|]

[†] Museum national Histoire naturelle, UMR 7205 MNHN-CNRS-Sorbonne Université-EPHE, Paris, France

[§] Sorbonne Université, MNHN, CNRS, EPHE, Université des Antilles, Institut Systématique Évolution Biodiversité, ISYEB, Paris, France

[|] University of British Columbia / Beaty Biodiversity Museum, Vancouver, Canada

Corresponding author: Thierry Bourgoin (bourgoin@mnhn.fr)

Received: 27 Jun 2019 | Published: 02 Jul 2019

Citation: Bourgoin T, Vignes Lebbe R, Bailly N (2019) Visualisation of Taxonomic Knowledge: Exploring and reporting taxonomic data, training students in taxonomy. Biodiversity Information Science and Standards 3: e37730. <https://doi.org/10.3897/biss.3.37730>

Abstract

Taxon concepts are complex, dynamic representations of the real world that are labelled with scientific names designating them. While names, taxa and classifications should be managed separately in databases (Bourgoin et al. 2019, Gallut et al. 2005), students may have difficulty comprehending the dynamic nature of the link between the three entities because taxa circumscriptions are complex to apprehend through textual representation and because names are independently ruled by nomenclatural codes. Exploring, reporting and training users about taxonomic knowledge are complex challenges that could be alleviated through development of efficient visualization tools.

We propose here a tool that generates a graphical representation visualizing the successive concepts of a taxon accepted as valid with its different names and positions in classifications, including its synonyms, homonyms, chresonyms, and other related taxonomic and nomenclatural issues during its lifetime. This tool has been successfully implemented both in database visualisation and used in training students about taxonomy.

In the database FLOW, [Fulgoromorpha Lists On the Web](#), (Bourgoin 2019), the tool creates a graphical translation of the referenced nomenclatural and classificatory story of a taxon such as the one presented in Table 1.

Table 1.

Textual chronology of the names and classifications for the tribal taxon *Elicini* (Insecta, Hemiptera, Tropiduchidae) as reported in the FLOW database.

1. *Elicaini* Melichar, 1915 transferred from [Fulgoromorpha, Fulgoroidea, Lophopidae, Lophopinae] to [Fulgoromorpha, Fulgoroidea, Nogodinidae] according to Fennah (1978): 118
2. *Elicaini* Melichar, 1915 incorrect original spelling of *Elicini* Melichar, 1915 emended by Fennah (1978): 118
3. *Gaetuliina* Fennah, 1978 transferred from [Fulgoromorpha, Fulgoroidea, Nogodinidae, Bladinini] to [Fulgoromorpha, Fulgoroidea, Tropiduchidae] as *Gaetuliini* *status novo* according to Gnedzilov (2007): 296
4. *Gaetuliina* Fennah, 1978 transferred from [Fulgoromorpha, Fulgoroidea, Nogodinidae, Bladinini] to [Fulgoromorpha, Fulgoroidea, Tropiduchidae] as *Gaetuliini* *status novo* according to Gnedzilov (2007): 296
5. *Eicina* Melichar, 1915 [Fulgoromorpha, Fulgoroidea, Nogodinidae, Bladinini] previous rank of *Elicini* Melichar, 1915 [Fulgoromorpha, Fulgoroidea, Tropiduchidae, Eicinae] according to Gnedzilov (2013): 184
6. *Gaetuliini* Fennah, 1978 synonym of *Eicina* Melichar, 1915 according to Gnedzilov (2013): 184

Thanks to a dedicated editor, the textual/html chronological account of the nomenclatural history of the taxon is displayed on the taxon page of the taxon *Elicini*. A javascript code reinterprets the chronological account displaying the corresponding graphical view as shown in Fig. 1.

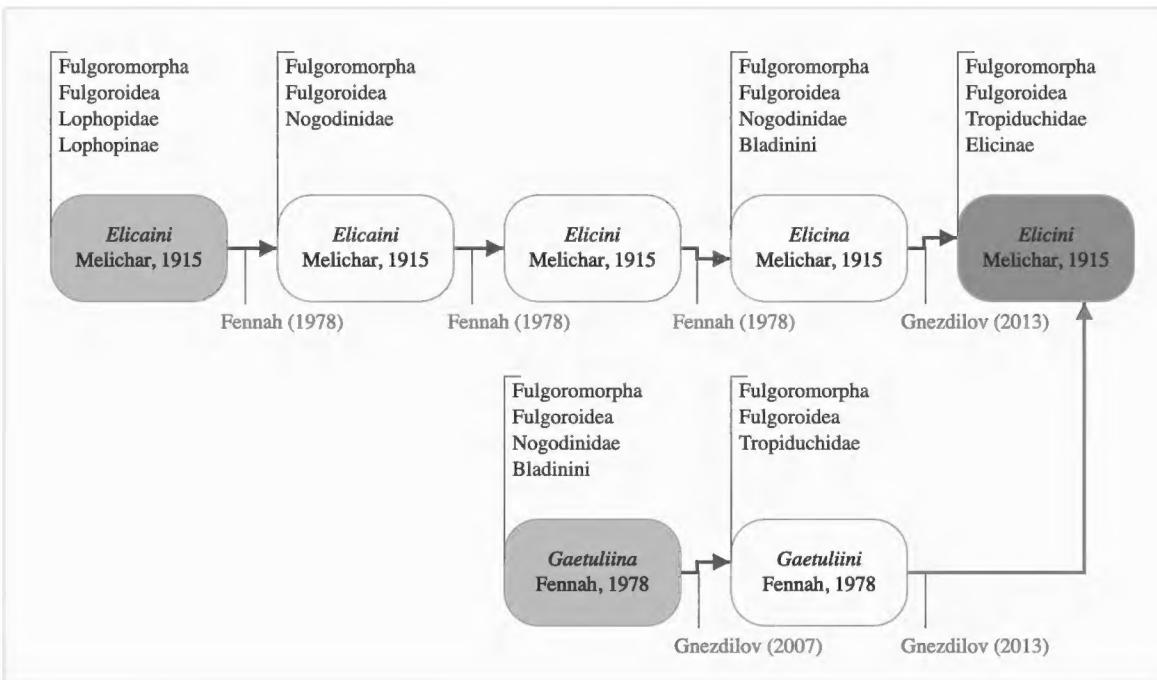


Figure 1.

Graphical display of taxon concepts in their respective classifications, names, and nomenclatural acts related to the taxon *Elicini* (Insecta, Hemiptera, Tropiduchidae) as reported in FLOW, according to Table 1.

The graphic provides a global view of the classification and nomenclatural history of the taxon. Different shapes and colours are associated with the different types of nomenclatural acts or information of both nomenclatural and taxonomic value. The tool is also easily adaptable to any domain dealing with changing knowledge with traceable chronology. This tool has been used successfully in the last several years to better visualize concepts of synonymy, homonymy and chresonymy; and, because it makes the differences between names and taxa, and the importance of contextualizing taxa in classifications, clearly understandable, it has proven particularly useful in training students in taxonomy.

Keywords

taxonomic data visualisation, training in taxonomy

Presenting author

Thierry Bourgoin

References

- Bourgoin T (2019) FLOW (Fulgoromorpha Lists on The Web): a world knowledge base dedicated to Fulgoromorpha. Version 8, updated. <http://hemiptera-databases.org/flow/>. Accessed on: 2019-4-09.
- Bourgoin T, Bailly N, Zaragueta R, Vignes-Lebbe R (2019) Taxonomy at the forefront of complex sciences: Names, Taxa and Classifications are necessary for complete taxon formalization. Submitted.
- Gallut C, Anta A, Bourgoin T, Soulier-Perkins A, Beard-Fargas P, Vignes-Lebbe R (2005) DBTNT: DataBase To Names and Taxa. A View on Life's Diversity: European developments in Biodiversity Information and the Catalogue of Life. Species 2000 europa and European Network for Biodiversity Information (ENBI) Biodiversity Informatics Fair, Stockholm, Sweden, 15 October 2005.